

**Remarks:**

1. Claim 6 has been amended to correct a grammatical error. Claims 1, 8, 10, 11, 18, 22, and 28 have been amended to correct a spelling error.
2. Claims 10, 16-18, 20, 21, and 26-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Sugiura (US 5,160,116).
  - a. Regarding claim 10, the Examiner asserts that Sugiura teaches all of the limitations of applicant's claim 10. Applicants respectfully point out that nowhere in Sugiura does it teach "the rod being disposed in the valve housing when in a de-energized configuration to permit the rod, when moving toward an energized configuration, to pre-travel a distance before contacting the ball that is sufficient to reduce a response time of the valve compared to a response time when the rod contacts or is very near to the ball in the de-energized configuration" as is claimed in applicant's claim 10. Neither Sugiura, nor any of the other cited references teach purposely designing a pre-travel distance between the ball and the rod. AS a matter of fact, the current state-of-the-art at the time of invention was to minimize or eliminate any pre-travel in order to reduce wear and tear on the ball and rod. If faster response times were necessary, actuator designers used larger magnetic packages, thus increasing the size and/or current requirements of the actuator. Applicants have innovatively recognized that actuator response times can be improved by designing in pre-travel and using appropriate materials to minimize the effects of the impact on the ball and the rod (page 7, lines 18-19) without

using a larger magnetic package and/or greater current. Applicants contend that this patentably distinguishes the instant invention over the prior art.

- b. Claims 11-19 depend directly or indirectly from claim 10 and therefore, for the at least the reasons cited above, are believed to be in condition for allowance.
3. Claims 1, 3, 4, 6-8, 11, 13, 14, 22, and 24 are rejected under 35 U.S.C 103(a) as being unpatentable over Sugiura.
  - a. Regarding claim 1, the Examiner alleges that Sugiura discloses the same valve as applicant's claim 1, and that it would have merely been a matter of discovering the optimum workable range for the distance between the rod and the ball. However, as discussed in point 2(a) above, applicant's invention is counter-intuitive with respect to the prior art, which has always sought to minimize the distance between the ball and the rod in the de-energized condition.
  - b. Claims 2-9 depend from claim 1, therefore for at least the reasons cited in point 3(a) above, applicants contend that claims 2-9 are in condition for allowance.
4. The Examiner makes no reference to claim 20, but it is assumed that the Examiner's argument concerning claim 20 would be the same as those against claims 1 and 10. See points 2(a) and 3(a) for applicant's response concerning those arguments.
  - a. Claims 21-29 depend from claim 20 and therefore, for at least the reasons cited above, applicants contend that claim 20 is in condition for allowance.
5. Claims 2, 12, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugiura in view of Wisniewski or Inden. These claims are all dependent from claim 1, 10, or 20. See above discussion.

Appl. No. 10/780,356  
Amdt. Dated May 19, 2005  
Reply to Office Action of February 24, 2005

6. Claims 9, 19, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugiura in view of Hayakawa. These claims are all dependent from claim 1, 10, or 20.
- See above discussion.

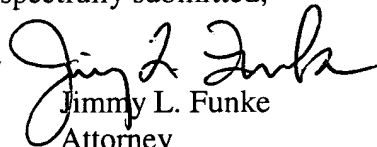
Applicants appreciate the Examiner's thorough examination of the instant application.

Applicants believe that the application is now in condition for allowance and look forward to a timely Notice of Allowance.

Although no fees are believed due, the Commissioner is authorized to charge our Deposit Account No. 50-0831 for any fees or credit the account for any overpayment.

Respectfully submitted,

By



Jimmy L. Funke  
Attorney

Telephone (248) 813-1214  
Reg. No. 34166

Date: May 19, 2005